

Special Issue

Optical Tweezers: From Light Scattering Theory to Micro/Nanoparticle Manipulation

Message from the Guest Editors

This Special Issue aims to advance the understanding and application of optical tweezers by exploring theoretical concepts, numerical models, and experimental breakthroughs in micro/nanoparticle manipulation. We invite contributions that bridge theory, modeling/simulations, and experiments, fostering interdisciplinary collaboration to address challenges in biomedical engineering, nanophotonics, and beyond.

- Advanced light scattering models/gradient force mechanisms for optical trapping;
- Scattering theory adaptations for trapping and manipulation of complex nanostructures and metamaterials;
- Novel optical configurations for enhanced trapping stiffness and resolution;
- Multifunctional/novel optical tweezer systems (optical trapping with structured light, optical fiber tweezers, holographic optical tweezers, photopyroelectric tweezers, etc.);
- Biomedical applications (single-molecule biophysics, cell manipulation, etc.);
- High-precision nanofabrication enabled by optically trapped probes;
- Integration of AI-driven adaptive optics for dynamic particle control;
- Integration with microfluidics or machine learning.

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About the Journal

Message from the Editor-in-Chief

You are invited to contribute a research article or a comprehensive review for consideration and publication in *Photonics* (ISSN 2304-6732). *Photonics* is an online open access journal covering both the fundamental and applications of optics and photonics. *Photonics* strives to provide an avenue to allow authors to disseminate their scientific findings—both theoretical/ simulations and experimental works—in highly accessible peer-reviewed journal publications. The manuscript in *Photonics* will be handled with quick turnaround production processing time. We welcome authors to submit their manuscripts for publications in *Photonics*. Our goal in *Photonics* is to enable fast dissemination of high impact works to the scientific community.

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